The Renewable Energy Modeling Series 2003

Reflecting a Dynamic Marketplace in the Adoption of Renewable Energy Technologies

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Overview

- The proper characterization of technology and its performance over time are critical elements of energy modeling.
- Equally important, however, are the preferences and behavioral responses of both consumers and firms.
- Evidence is mounting that the typical economic description of business behavior — in which firms are assumed to follow strict principles of profit maximization (subject only to a production function and budget or regulatory constraints) — is ***ready for a transformation.***
- Today we begin an exploration of that topic by exploring several of these elements within Green Power Marketing and Green Power Market Modeling Outputs
- To the extent interest in this topic warrants, we can devote another workshop that will allow us to dig deeper into the critical issues discussed here today.

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Among the Critical Perspectives

- A clear implication of the modern theory of the firm, and the empirical evidence on relative efficiencies of firms, is that the assumption of optimization should be questioned and, in some cases, abandoned.
- There are both theoretical and practical reasons to doubt that the behavior of groups has the same "desirable" qualities as individual rationality.
- Of course, to acknowledge "anomalous" behavior and "mental accounting" (Thaler, 1991), to suggest that "choices, values and frames" impact our decisions (Kahnemann and Tversky, 2000), or to say there is "room for improvement" is not the same thing as saying that such improvements come easily or automatically (DeCanio and Laitner, 2003).
- A refocusing of theoretical attention to the tangible realities of consumer preferences and behavior will be difficult, and may require years of effort before yielding sharp numerical results. However, these disadvantages are far outweighed by the gain in reliability and realism that would accompany such an effort.

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The Morning's Agenda

- ***Walter Short, NREL***: Issues in Applying Green Power Market Data and Modeling in Energy Modeling
- ***George Backus, Policy Assessment Corporation:*** Incorporating Consumer Preferences Into Green Power Demand Within Energy Models
- ***Blair Swezey, NREL:*** Green Power Data Issues
- **Break**
- ***Matt Clouse, EPA:*** Observations on Green Power Purchasing Trends: Business and Institutional Customers
- ***Jim McVeigh, Princeton Energy Resources International:*** Green Power Market Models
- ***Walter Short, NREL:*** Perspective on Issues for Energy Modeling
- ***Discussion***

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For Further Reading:

Bjornstad, David J. "Economic Incentives in the Purchase and Use of Energy-Using Products: Past Practices and New Developments." Oak Ridge, TN: Oak Ridge National Laboratory, 2003.

DeCanio, Stephen J. and Laitner, J.A. "Skip". "The Role of a Dynamic Marketplace in the Adoption of Industrial Efficiency Innovations," *2003 ACEEE Summer Study on Energy Efficiency in Industry.* Rye Brook, NY: American Council for an Energy-Efficient Economy, 2003, 51-65.

Greenwald, B.; Stiglitz, J.A. and Weiss, A. "Informational Imperfections in the Capital Markets and Macroeconomic Fluctuations." *American Economic Review*, 1984, *74*(2), pp. 194-99.

Kahnemann, Daniel; Ritov, Ilana and Schkade, David. "Economic Preferences or Attitude Expressions? An Analysis of Dollar Responses to Public Issues," D. Kahnemann and A. Tversky, *Choices, Values, and Frames.* New York, NY: Cambridge University Press and Russell Sage Foundation, 2000, 642-71.

Policy Assessment Corporation and ICF Consulting. "Understanding the OPT Technology Value Chain: Final Report." Golden, CO: National Renewable Energy Laboratory, 2001.

Thaler, Richard H. *Quasi Rational Economics*. New York, NY: Russell Sage Foundation, 1991.

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